

Interdisciplinary Training in Stem Cell Biology, Engineering and Medicine

Grant Award Details

Interdisciplinary Training in Stem Cell Biology, Engineering and Medicine

Grant Type: Research Training II

Grant Number: TG2-01164

Project Objective: To provide comprehensive stem cell training (research, coursework in science, regulation and ethics) to 5 graduate students, 9 postdoctoral scholars, and 3 clinical fellows per annum.

Investigator:

Name: Ellen Robey

Institution: University of California, Berkeley

Type: PI

Award Value: \$6,901,914

Status: Closed

Progress Reports

Reporting Period: Year 4

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Reporting Period: Year 5

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Reporting Period: Year 6

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Reporting Period: NCE Progress Report

Grant Application Details

Application Title: Interdisciplinary Training in Stem Cell Biology, Engineering and Medicine

Public Abstract: This proposed Comprehensive Training Program will include 16 CIRM Scholars, three clinical fellows, eight postdoctoral fellows, and five pre-doctoral fellows. Our multidisciplinary program will provide training opportunities in stem cell biology, engineering, and medicine, with a focus on applying stem cell research toward the goal of treating human disease. Coursework offered as a part of this program will cover basic stem cell biology and current and potential uses of stem cells in regenerative medicine, as well as ethical, legal and social issues in stem cell research. CIRM Scholars' research projects may investigate fundamental biomedical problems such as the molecular basis of stem cell pluripotency, stem cell differentiation into mature tissues such as blood, nerve and muscle, or the reduction of stem cell regenerative capacity with ageing. CIRM Scholars whose expertise is in engineering may work to develop controlled environments for expansion and tissue-specific differentiation of human embryonic stem cells, or devices to enable or evaluate the results of stem cell transplantation. Clinical Fellows will integrate basic and translational research, with particular emphasis on cord blood transplantation for genetic or malignant blood diseases. This program will train leading young physicians, scientists and engineers who will contribute to the understanding of stem cell biology and to the development of stem cell-based therapies, as well as advancing the medical, intellectual, technological and economic strength of the State of California.

Statement of Benefit to California: This proposed training program will develop highly skilled scientists, engineers, and clinical researchers to help ensure California's continued leadership in biomedical research and engineering. The basic biological research component of this program seeks to identify molecules or biochemical pathways that could function as targets for enhancing or blocking stem cell differentiation. The resulting information could thus serve as a catalyst for drug development. Translational research projects that will be part of the proposed program include development of synthetic materials to support stem cell culture and tissue engineered blood vessel or nerve grafts. The program also includes engineering of novel equipment for imaging and isolation of stem cells. A primary goal of this work is to build new products to be developed and marketed by California biotechnology companies for research and clinical use. The clinical research component of our proposed program will attempt to expand the circumstances under which umbilical cord blood transplantation can be used to cure genetic blood diseases such as sickle cell anemia and thalassemia. These conditions afflict a significant number of individuals in California, particularly in underserved populations, and require expensive and tissue-damaging treatment throughout patients' lives. Success of this program will benefit the State of California by providing extended and enhanced quality of life for patients with genetic blood diseases, as well as a reduction in the anticipated amount of medical treatment cured patients will require over their lifetime.

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